A Century Later – Remembering WW1

WW1 Commemorative Historical Cards

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Contents

Belgian Neutrality Violated

In August 1914, Germany invaded Belgium as part of their plan to crush France quickly and then turn east to invade Russia. The violation of Belgium's neutrality led Great Britain to declare war on Germany. German leadership did not anticipate Belgium's fierce resistance. Russia mobilized quickly and British troops moved into the Belgian port of Ostend, which briefly served as Belgium's provisional capital. As part of their westward assault, Germans finally took the city in October. Shown are German troops marching down the streets of Ostend.

Armored Car Support

Retrofitted automobiles were used during the war for transport. Cars were augmented with thick steel plates and a rear-mounted turret gun. Without armor on the front or on top, crews wore warm clothing and used goggles in the absence of a windshield. Powered by four-cylinder engines, the cars could travel up to ten miles per hour. Shown is a crew of an armored car posing for a battlefield photograph while other crew members scan the terrain and consult a map.

Murder in Saravejo

In 1908, the Austro-Hungarian Empire under Habsburg rule seized Bosnia- Herzegovina from the Ottoman Empire. The resident Bosnian Serbs struggled against Habsburg rule. On June 28, 1914, Gavrilo Princip, a Bosnian Serb, assassinated Archduke Franz-Ferdinand of Austria-Hungary, the heir to the Habsburg throne. After the assassination, Serbia rejected Vienna's demand for jurisdiction over the murder investigation. Russia offered Slavic Serbia total support, while Vienna received support from Germany. Alliances were activated and Europe went to war.

Russian Steam Roller Stopped

Less than a month after the assassination at Sarajevo, Russia drove west into Prussia. Preoccupied with the French enemy, Germany was unprepared for the Russian "steam roller" and was forced to shift troops to reinforce its eastern defenders. They stopped the Russians at Tannenberg in August and defeated them at Masurian Lakes in September and January. The Germans exploited Russian signals and employed reconnaissance aircraft to great effect. Shown is a standard German MG08 machine gun and a crew in Masuria, Prussia, 1914

Colonel G. G. Naismith

Colonel Naismith, 1st Canadian Division medical officer and sanitarian, identified the poison gas used by the Germans as chlorine gas. He offered troops a hasty "gas mask," cotton pads saturated with hypersulphite soda, worn over the nose and mouth until proper masks were provided. Germany was the first country to use poison gas as a weapon of war. In April 1915, the Germans unleashed one-hundred and sixty tons of gas in Ypres, Belgium, where the 1st Canadian Division was fighting.

Battle of the Marne

Visualizing the battlefield, a German Officer sits and ponders his options in this photograph taken during the Battle of the Marne. The "working" map of northeast France is projected onto a screen in a darkened room – a relatively new technology. The map shows the five main thrusts of the German assault on Paris, which the Germans hoped would result in an early war victory. The actual result was a catastrophic German defeat condemning Germany to a two front war.

Berthiot Color Lens

Major John Reynolds, Commander of the 91st Aero Squadron (the pilot) looks on as a French 1824 camera, fitted with a Berthiot color lens, is off loaded at Gondreville-sur-Moselle Aerodrone, France. The airplane is a French Salmson 2A2. The 91st Aero Squadron performed observation, surveillance and reconnaissance missions with remarkable results.

Beginning of Submarine Warfare

World War I gave birth to undersea warfare. The German Navy first used submarines successfully against an enemy vessel when U-21 sank HMS *Pathfinder* off Scotland's St. Abb's Head on September 5, 1914. The U-boat became one of Germany's premier naval weapons during World War I. In the photograph you can see U-20 (front row second from left), which sank the RMS Lusitania on May 7, 1915 and the U-21 (front row, right).

Helgoland Clash

In the first naval engagement of World War I, the Royal Navy sought to penetrate the defenses established by the German Imperial Navy at the Helgoland Bight in Schleswig-Holstein. Thirty-one destroyers and two cruisers commanded by Commodore Reginald Tyrwhitt joined Commodore Roger Keyes' submarines to attack the Germans. Assisted by Grand Fleet elements, including HMS *New Zealand* pictured here, commanded by Rear Admiral Goodenough and Vice Admiral Beatty, the British inflicted heavy losses on the German forces of Rear Admirals Hipper and Maas.

The Race to the Sea

In the West, the mobility required for decisive campaigns ended in November when combat turned into static warfare as modern weaponry retarded movement and ended traditional cavalry missions. Neither side could turn the other's flank, resulting in a race to the North Sea. With success at Ypres, the Allies ended the race "Race to the Sea" and retained the Channel Ports. Three British cavalry divisions dismounted and fought in this battle as infantry.

Pigeons at War

Communications were problematic in trench warfare and pigeons became a proven commodity: fast, reliable, difficult-to-down, and virtually undetectable. Success rates per sortie were astonishing. In 1903, a pharmacist, devised a pigeon delivery system for medicine, and subsequently fashioned a miniature camera he could harness to a bird. Camera-fitted pigeons flew at low altitudes, and the mechanism of an interval meter, a camera, and a timer produced usable imagery. Depicted are two German pigeons with their cameras.

Success in the Caucasus

The Ottoman Empire and the Russian Army fought in the Caucasus from December 1914 to January 1915. Operating in wintry mountains, poorly equipped, and plagued by hunger, typhus and hypothermia, the Ottoman Army collapsed. The Russian Army was assisted by local Armenians. This photograph shows entrenched Russians, in Sarikamish, Russian Armenia, on the Caucasian Front.

German Field Telephone

German forces use a small clearing in a forest to set up a field telephone post in 1915. The field telephone was then a modern wonder that greatly improved communications when forces were in remote locations. It quickly replaced the military courier when communications needed to be quickly

exchanged. As seen here, the field telephone co-existed with one of the most primitive forms of human transportation—the horse, which also was soon to be replaced by another form of modern technology—motorized transportation.

Krupp Railway Gun

Friedrich Krupp of Essen emerged as one of the world's most powerful arms manufacturers well before the Great War. In this photograph you can see heavy artillery mounted on a railway car both for swift transport and for effective support and recoil control. The infamous German *Paris Gun* fell into this category as did the U.S. Navy's railway guns. While not terribly precise, the *Paris Gun* could hit the city from 70 miles away. The shells would reach an altitude of 24 miles before descending.

Christmas Truce

Consisting chiefly of burial parties, spontaneous local ceasefires occurred along Anglo-German lines throughout December 1914. The unofficial truce morphed into unofficial Christmas celebrations, with thousands participating. Fighting resumed New Year's Day, 1915. The image shows Anglo-German soldiers fraternizing on December 26.

Battle of Dogger Bank

To prevent enemy fishing vessels from collecting intelligence in the North Sea, the Germans moved naval forces to the Dogger Bank. Vice Admiral David Beatty pursued with five battle cruisers and seven light cruisers, leading Vice Admiral Hans von Hipper's German fleet to retreat to the southeast. This was the third fleet-onfleet engagement of the European war.

Front Line Balloons

Front-line balloons provided an observation platform for reconnaissance and artillery spotting. The lighterthan- air balloon was tethered by a steel cable to a powered winch for rapid ascent and descent. It operated at altitudes of 1,000 to 4,000 feet. The balloon's wicker basket carried two soldiers in addition to communication, observation, and camera equipment. The spherical French balloon in this photograph is piloted by the French Aerostiers at Beauchemin in 1915.

Gas at Ypres

Germany introduced chlorine gas to its weaponry inventory at Second Ypres, April 22, 1915. Heavier-than-air chlorine hugged the ground and affected both man and horse in low trenches and shell holes. Because horses do not breathe through their mouths, equine respirators required a "bag over the nose" design. Until the gas mask was developed, soldiers used water-soaked handkerchiefs. Ultimately, all creatures serving on the front lines were fitted out with respirators, including goats, pigeons, mules, humans, and dogs.

A Glorious, But Brief Career

In November 1914, the German Cruiser SMS EMDEN landed raiders to cripple the Australian radio station on Direction Island in the Cocos/Keeling group. A transmitted distress signal alerted the nearby Australian cruiser, HMAS SYDNEY, which attacked and destroyed the EMDEN. EMDEN's fate was that of Germany's naval effort in Asia. Germany was unable to keep a ship on station in distant waters without forward defended naval bases. Shown is SMS EMDEN, with severe battle damage, scuttled and beached on Cocos/North Keeling Islands off western Australia.

Bombardment of Tschaukaib

Advances in technology frequently enabled tactical actions impossible in earlier conflicts. Maritime technology enabled the Europeans to reach and supply areas they colonized across the world, and the advent of airpower and advances in weaponry made effective defense or attack possible. In this picture, ground troops scatter as an air raid begins on the South African military camp at the Tschaukaib Railway Station in German Southwest Africa on December 17, 1914.

Battle of Neuve Chapelle

This clash represented Britain's first planned offensive on the Western Front and the first campaign ever completely informed from the outset by aerial imagery. The Royal Flying Corps (RFC) conducted more than 80 aerial reconnaissance sorties, while the British First Army provided intensive artillery fire directed by airborne spotters. The British advance eventually stalled due to a combination of frail communications and a shortage of artillery rounds. This is an RFC Bleriot Experimental #2c biplane on a reconnaissance mission in March 1915.

Occupation of Tsingtao

Held by the Germans as a naval base since 1897, Tsingtao fell to the Japanese World War I. Empowered by its alliance with Great Britain, Japan attacked Tsingtao from the sea on October 17, 1914. In the process, the seaplane tender Wakamija launched the world's first naval air strikes upon the town, the Austro-Hungarian cruiser, Kaiserin Elisabeth, and the German torpedo boat Jaguar. The German garrison surrendered in November. This photo shows the French-made Japanese aircraft, Maurice-Farman MF.7s, on the beach at Tsingtao, China.

Collecting Imagery Intelligence

In this 1915 photo, a photographer captures a target by physically holding the camera and looking down the top mounted sight. Early in the war, aviators did not have openings and rigid mounting systems in the airframe. Here, a photographer tightly grips his Graflex Reconnaissance Camera, made by Folmer & Schwing Manufacturing Co., a firm later bought by Eastman Kodak. In later years, this camera model also went under the name Folmer Graflex K20, a device similar to the Fairchild K20.

Aeronautical Charts

For the pilots flying at the front, the maps, the aeronautical charts, surveys, and reference points quickly became critical to survival. This photograph shows the prominent place maps and aero-charts occupied in the Operations Building of the 1st Day Bombardment Group. The Group operated out of Maulan Aerodrome, in Lorraine in northeastern France. The U.S. Army Air Service also flew from this airfield in 1918 and 1919.

Gallipoli

The British and French launched a naval attack on the Dardanelles, accepting the risk of operating in confined seas. They wanted the Ottoman leadership to withdraw troops fighting the Russians, and shift them to defensive duty at the straits. Aerial reconnaissance played a role in preparing for this ultimately unsuccessful battle and in the ill-fated assault on Gallipoli that soon followed. The image here provides an aerial view of a Turkish town on the Dardanelles, possibly Chanak, taken by the French during the Battle of Gallipoli, 1915.

Sopwith Camel

These Sopwith Camel fighters rest on the flight line at the 800th British Aero Squadron. These single-seat fighters carried the war to the Germans along with Dolphins, also from Sopwith, and SE5As built by the Royal Aircraft Factory. The Camel was powered with a rotary engine and could reach 115 miles per hour. While a very successful fighter, pilots often experienced handling problems due to the gyroscoping effect of the rotary engine and the forward placement of the craft's center of gravity.

French Light Artillery

In 1914, the French Canon 75 Modele 1897 light artillery piece represented excellence. Its greatest attribute was its recoil system. A skilled crew could fire rapidly without adjusting the gun mount for sighting as the piece was firmly fixed upon the ground and focused on the target. Considering it their premier artillery piece, the French Army did not develop the heavy artillery needed to obliterate German trenches until 1917. This picture shows a light artillery team firing the Modele 75 on Gallipoli's Cape Hellas in 1915.

Lusitania Hit by Torpedo

The magnificent RMS Lusitania fell victim to U-20, commanded by Kapitänleutnant Walter Schwieger, May 7, 1915, at the Old Head of Kinsale, off the coast of Ireland. One torpedo caused two explosions, quickly sinking the ship with 1,195 passengers, including 128 Americans. The outrage over this attack severely damaged Germany's reputation in the neutral United States.

German Field Telegraph

German officers review maps and documents at a wireless field telegraph station in 1915. The station is housed in and under a horse-drawn wagon. Components of the station are protected from the elements by canvass covers spread over and around the wagon and by tightly packed straw in critical places. Wireless telegraphy transmitted Morse code with the receiver using either a headset or hand held device to hear the dots and dashes.

Hohenzollern Redoubt

The Hohenzollern Redoubt, a German built temporary fortification near Auchy-les-Mines, France, is located in this aerial photograph high center left, with the German trenches north and the British trenches south. During the Battle of Loos, Sept. 25 – Oct. 15, 1915, British forces captured the Redoubt, lost it, and then tried but failed to recapture it. The area in the photograph witnessed indescribable carnage that was later determined to be "nothing but useless slaughter."

Balloons at Sea

The HMS Canning, a kite balloon ship, is anchored off Salonika, Greece, in November 1915. Accommodating the balloon required fitting the ship with a large sloping deck, a hydrogen gas compressor, and a winch to tether the "kite" balloon. The ship also had wireless telegraphy and quarters for the balloon crew. From 3,000 feet, the crew could observe enemy troops, direct artillery fire, and keep a lookout for submarines.

Skoda 302mm Howitzer

Skoda's M.11 howitzer entered Austro-Hungarian service in 1911. The 26-ton Skoda 30.5cm/12in heavy siege howitzer was designed to obliterate reinforced concrete to six feet with an 847lb. armor piercing round. First used in 1914 to reduce three Belgian forts, the M.11s served until 1918 against

Serbia, Italy and Russia. Pictured here is an M.11 crew preparing the weapon for action in the Carpathian Mountains.

Italian Alpine Troops – Isonzo

The Alpini are an elite mountain military corps of the Italian Army. During World War I, the 26 peacetime Alpini battalions were increased by 62 battalions and saw heavy combat throughout the Alpine region of the Italian-Austrian front. The regiments were never sent into battle as whole, instead single companies and battalions were given specific passes, summits or ridges to guard and defend on their own. This picture depicts one such unit climbing into position.

Self Defense Aloft

Despite the observer's importance, he received minimal protection from his aircraft. The observer's cockpit had three guns: one fixed forward-firing for the pilot to aim, one moveable forward-firing, and one on a moveable rear-firing pole mounted over the upper wing. The observer had to stand on his seat in order to use the rear-firing gun. This photograph demonstrates the observer's firing positions in the Royal Aircraft Factory F.E.2d aircraft.

View from a French Dirigible

The airborne dirigible served as an excellent venue for observing activities of both allied and enemy forces whether on land or at sea. Once out of firing range, it provided the crew with a relatively safe, if harsh accommodation, barring an actual air attack. Advances in non-dirigible aviation in terms of aircraft speed, reliability, lifting power, flexibility and maintenance, consigned the dirigible to minor support roles after WWI ended.

Verdun

In 1916, Germans captured Fort Douaumont while attacking the fortress city of Verdun. Douamount was the largest of nineteen forts in the area of northern France. In 1914, German siege guns crushed Belgian forts and France noted the destruction. Douaumont-like forts were judged as indefensible by 1915. Shown is an early 1916 photo of Douaumont before the German capture.

Jeffery Armoured Car

By 1916, Canada's Jeffery Quads vehicles were tasked with urgent counterinsurgency missions in Ireland and India. Over time, mobile warfare efforts resulted in forming the First Canadian Motor Machine Gun Brigade. During the 1918 German offensive, they emerged as a rapid response force with a heavy mix of tanks, gun trucks, motorcycles, and armored cars. Shown is Jeffery Quad, likely of Eaton MMG Battery.

Major James W. Bagley

As a U.S. Geological Survey employee from 1905 to 1917, James W. Bagley mapped the Chugach Range in Alaska and developed a state-of-the-art panoramic camera, which vastly improved the scope of a surveyor's photograph. During World War I, Major Bagley, U.S. Army, Corps of Engineers, applied those tools and techniques and developed the three-lens aerial camera, redefining what could be captured in a single flight. "[His] name is indelibly inscribed in the history of American photogrammetry," stated his obituary in 1947.

Signal Exchange

The British Army's Royal Engineers provided "signal service" at the front as the Royal Engineers Signal Services (RESS). By 1916, the RESS used the Fullerphone, named for inventor Captain A.C. Fuller, to reduce the possibility of German interception. Shown is an RESS signal office with six duplex circuits, or buzzers, placed on the table to deliver and receive Morse code transmissions.

Austrailian Signalers

As artillery dominated the Western Front, the ability to adjust fire was a singular improvement. The Royal Flying Corps (RFC) artillery-spotting aircraft sent Morse code signals, which permitted the artillery batteries to adjust their fire. The Marconi Mark III, seen here in 1916 during training with Australian signalers, was limited to the receive mode. Continuous-wave transmitters were developed after 1916, which boosted air-to-ground reliability. Viable air-to-ground voice communication was not operational until 1918.

Ypres, Belgium

The medieval textile city of Ypres, Belgium, lays pitifully destroyed after enduring the First, Second, and Third Battle of Ypres (1914 – 1917). The effectiveness of German artillery bombardment is clearly evident in this aerial photograph of 1919. The rest of the city was rebuilt to capture the spirit, if not the actual dimensions of the original.

British Mark I at the Somme

The British Mark I was the world's first combat tank. It could cross trenches, resist small-arms fire, travel over difficult terrain, and carry supplies. The unusual rhomboidal shape gave it a long track run. The main armament was arranged on the side of the vehicle. The tank was fitted with a wire "grenade shield" and steering tail, features that were discarded in the next model. The Mark I was first used during the Battle of Flers-Courcelette on September 15, 1916.

British Gas Attack

The battle of the Somme fought between July 1 and November 18, 1916 was one of the wars' largest and bloodiest battles. The French and British artillery provided a week long bombardment of the German Lines, intended to crush German defenses. A British gas attack is shown in progress between Carnoy & Mountauban, shortly before the Somme offensive, June 26 to July 1, 1916. Montauban, behind German lines, is at the top left and Carnoy, behind British lines, is at the bottom right.

Bombing from an Airship

Aerial bombardment of the enemy became an obvious use for airplanes and lighter-than-air craft as the war opened. However, the best method of delivering the weapons did not seem nearly as obvious. Shown here an officer on board a British ZZ Class airship employed the most basic method, visual sighting and literally throwing the bomb from the rear cockpit of the gondola.

Battle of the Somme

A British observation balloon looms over the Battle of the Somme in July 1916. Here, the forces of the British Empire and France battled Germany and Austria-Hungary from July 1 to November 15, 1916. Aerial observation provided planners with information on enemy positions, equipment, and

movements. Balloon observers also directed artillery fire, watched for enemy aircraft, and provided after-action reports and photographs on damage and casualties.

Lt. Raoul Lufbery, Lafayette Esc

Born to a French mother and an American father, Raoul Lufbery served in the US Army as a teenager. In 1914, he joined the Aéronautique Militaire and trained as a fighter pilot in the French Nieuport aircraft. In 1916, he helped create the Lafayette Escadrille and emerged as a fighter ace. Commissioned in the US Army Air Service in 1917, he already had sixteen confirmed victories. Commanding the 94th Aero Squadron, he trained such pilots as the American ace Eddie Rickenbacker. He died in action on May 19, 1918.

Moo Cow Farm

Combat at Mouquet Farm began in August 1915 as part of the Somme offensive. The farm was near the German strong point of Thiepval. Three Australian divisions advanced toward the farm, but their approach was under observation from German artillery. After suffering heavy casualties, they were relieved by a Canadian corps. Eventually, the farm was captured on 26 September following a general attack on Theipval Ridge. The German zig-zag trenches are evident in this photo as well as the shelled farmhouse walls.

Map Mosaic in Palestine

Resourcefulness in the field is evident as British soldiers in Palestine set up an outdoor studio to create a photograph of a mosaicked map. A crate is used for a camera platform and the map is affixed in pieces to a board propped up against a temporary field shed. Atop the shed, a soldier welds a sun screen to evenly shade the map for proper exposure and to keep the sun from entering the camera lens. Another soldier holds a piece in place.

Becoming Royal Artillery

Artillery dominated trench warfare. Royal Garrison Artillery (RGA) controlled siege artillery, and its inventory included 8-inch howitzers. Marks I to V were effective, but improvised naval ordnance. To remedy this, RGA directed Vickers to produce a purpose-built, 8-inch howitzer. In 1916, Mark VI arrived; VII and VIII followed. Shown, breech-loading BL 8-inch howitzer—probably Mark V. With short barrel and two recoil tubes, the breech is a Welin stepped interrupted screw. It fired one high explosive round to five miles. With steep trajectory (plunging fire), the focus was counter-battery.

German Anti-Tank (AT) Rifle

The 13.2mm AT rifle was the conflict's lone anti-tank rifle. Somme, 1916, marked the inaugural for tanks. Tank performance was wanting, but Germany initiated work on an AT rifle. In 1917, Britain's Mark IV tank debuted at Messines. It represented major improvements, providing additional impetus for AT rifle development. Operational by 1918, two crewmen fired high-velocity, large-caliber anti-tank rounds, penetrating 20mm armor at 100m. Shown two New Zealanders hold the 66in T-Gewehr; singleshot, bolt-action weapon weighing 41 lbs., July 1918.

Artillery in East Africa

Breech loading 5.4-inch (field) howitzer was a British Army artillery piece, based upon a 5-inch howitzer and modified for Britain's Indian Army's duties in Northwest Frontier. With a range of 4,800 yards and in shrapnel mode, the cast steel 60-lb. shell housed 350 metal balls. Shown, is the 5.4-

inch howitzer with gunners. These weapons saw combat in East Africa, 1916–1917. Manned by British Territorial Force crews, 5.4-inch howitzers contributed to the destruction of the last powerful rapidfire 4.1-inch gun from the scuttled German cruiser, SMS *Konigsberg*.

Schwaben Redoubt Trenches

The Schwaben Redoubt was a German strongpoint built near the village of Thiepval, overlooking the River Ancre. It formed part of the German defensive system in the Somme sector. Consisting of a mass of machine-gun emplacements, trenches, and dug-outs, this warren of earthworks and its garrison resisted several British assaults before being captured in October 1916. The two German forward lines are at lower left, connected by four communication trenches running SW-NE to the Schwaben Redoubt at upper right.

Trenches at Vimy Ridge

Canadian artillery research on sound ranging and flash spotting emerged during the conflict as a valuable counter-battery tool. Aerial imagery effectively supplemented artillery sound ranging against German artillery at Vimy Ridge. The Canadian Counter Battery Office at Vimy identified half of all German guns destroyed. Preparation was meticulous, and included massive sand tables depicting hard points. The present image offers a vertical view of Vimy Ridge. The crenelated line is the German trench; heavily-shaded zig-zag line is barb wire and artillery impact areas.

Battlefield Photography

Early battlefield photography was a grueling process due to the heavy weight of the equipment and the difficult shooting conditions. Shown are two photographers sitting on the parapet of a British Mark V tank, holding their tripod and field camera. The parapet contained the armaments that made the tank so deadly in battle. The early tank armaments, side mounted rather than on top, lowered the profile and improved stability and balance of tanks when traversing trenches or other rugged terrain.

American Troops in London

The United States entry into the war was welcomed by the Allies as America's military power and industrial might were desperately needed after the losses at the Somme and Verdun. Shown are American troops, led by a marching band and cheered by onlookers, crossing the Westminster Bridge over the River Thames in 1917, on their way to the Western Front. Visible in the background is the famous Palace of Westminster, home of Great Britain's Parliament.

The Hindenberg Line

After a crushing defeat at Verdun, France in 1916, the Germans began erecting protected battle positions, roughly a mile behind a system of trenches, barbed wire, obstacles, and hidden command posts. The Germans began construction in September 1916 on the Hindenberg Line, a defense system that ran from the Belgian coast to Chemin des Dames, north of Paris. The Hindenburg Line was broken before the massive Allied offensive of September 1918. Shown is a portion of the Hindenberg Line near Bellicourt, France in October 1917.

Allenby in Palestine

In June 1917, General Edmund Allenby, fresh from his command of the British 3rd Army at Arras and Vimy Ridge, led the British forces in Egypt. In October his attack on German and Ottoman forces in

Palestine at Gaza opened with an artillery barrage from more guns per yard of front than the Allies had used since the Battle of the Somme. Aerial imagery and photo interpretation successfully directed this artillery action. Shown is an aerial photograph of Mount Olivet near Jerusalem a typical example of aerial intelligence during the war.

Aerial Clarity

The clarity of century-old aerial photography is often astonishing. Shown is a reconnaissance photograph from July 22, 1917, which shows the opposing trenches between Loos and Hulluch in Artois, France. Clearly visible are the trench systems - German trenches are located on the right, and British trenches are at the upper left. Also visible is the vast area between trench lines, commonly referred to as “No Man’s Land”. Take note of the vertical line to the left of center, which is a pre-war road.

The Bolshevik Revolution

Hoping to promote unrest, the Germans transporte the Bolshevik leader, V.I. Lenin, from exile in Switzerland to St. Petersburg, Russia in April 1917. In July a provisional government under Aleksandr Kerensky replaced the Russian Tsar, but Lenin and the commander of Bolshevik forces, Leon Trotsky, seized power in November 1917. As the western Allies watched, Lenin pulled their Russian ally out of the war, significantly changing the strategic picture. Shown are Bolshevik forces storming the Tsar’s Winter Palace in St. Petersburg.

Gardeners of Salonika

To assist Serbia, the Allies seized Salonika, a port in neutral Greece. Although the Macedonian Front was isolated from the war action, the Allies remained in Salonika as a force in readiness. Located behind barbed wire, troops were called, “the gardeners of Salonika,” as soldiers often cultivated gardens. Shown is British Army’s Number 17 Kite Balloon Section in the Struma River Valley.

Airstrike

From 1917 to 1918, Britain’s key air leaders, such as Major General Sir Hugh Trenchard, embraced the concept of strategic bombing—day and night operations of massed bombers with deep penetration upon the German infrastructure. Although this strategy was ahead of the available technology, the strategic bombing mission proceeded under the direction of the Royal Flying Corps. Shown is an aerial photo, taken from a DeHaviland/DH-4 light bomber, of a German ammunition train billowing steam following an air strike on the German-occupied rail junction in Thionville, France.

Captain Charles H. Ruth

Charles H. Ruth was the first commanding officer of the Army Engineer Reproduction Plant (ERP). Before 1917, there was little interest in the United States for maps of foreign countries. During the course of the war, the ERP produced some nine million maps. It was because of Captain Ruth’s initial direction that the ERP became one of the major military topographic organizations in the world. Captain Ruth left the Army in 1919 and joined the Evening Star newspaper staff in Washington, DC.

Australian Troops on Duckboard

Battlefield trenches were often muddy or flooded due to rain and inadequate drainage systems. Keeping feet warm, dry, and healthy was not just a personal interest, but also a legal one—getting

trench foot, which could require amputation, could become a court martial offense. To remedy this situation, duckboards were often placed in the trenches to provide a clear, dry pathway for those needing to move about. Shown are Australian soldiers "duckboard" walking above the wet terrain of the Albania Woods in October 1917.

The Red Baron

Baron Manfred von Richthofen, a legendary German fighter pilot known as "The Red Baron," was the top flying ace of WWI with eighty air combat victories. He built his reputation flying Albatros D.IIIs and tri-wing Fokker Dr.Is. He commanded the Jasta-11 fighter squadron and later the JG1, a four squadron command coined the "Flying Circus." By 1918, he was regarded as a national hero in Germany and well known by the western allies. He was shot down and killed over Amiens, France, on April 21, 1918.

Captain Francis H. McNamara

Frank McNamara was the lone Australian aviator to be honored with Britain's Victoria Cross. McNamara was Egyptian-based for Suez defenses and conducted missions over Ottoman-occupied Sinai. He was badly wounded in 1917 when an improvised onboard ordinance exploded during a Gaza strike.

Renault Light Tank

The US military arrived in France without tanks, thereby relying on France's premier light tank, the Renault FT. The FT carried a two-man crew and featured a mounted 8mm Hotchkiss machine gun on a fully rotating turret. Shown is an FT in US service during the 1918 St. Mihiel Offensive, the first independent American offensive of the war.

Bombardment

The curtain of moral responsibility that once dictated the fighting of battles to areas outside of villages and towns, sparing destruction and innocent lives, had closed by WWI. Every community was fair game in the push towards victory. Shown is an aerial view of the ruins of Vaux, France, after the July 12 –15, 1918 battle, that shows the severity of the destruction. Vaux was rebuilt, unlike other destroyed villages that had "died for France"—they were preserved and remain uninhabited to this day.

1st Aero Squadron

The 1st Aero Squadron is the oldest (1913) US military air unit, and first to see combat. The 1st Aero Squadron's operations during WWI consisted of close-range daylight reconnaissance and twilight artillery spotting. Emissions control and plane guard escorts characterized long-range reconnaissance. Other missions included artillery adjustment and infantry contact patrols. Leveraging intelligence collected in flight to adjust artillery fires on the ground was difficult due to poor air-to-ground communications at the time. Shown is a Salmson 2 A2 aircraft—a mainstay of French and United States observation flights.

Women's Radio Corps

The Women's Radio Corps was established under the Army Signal Service and trained women in wireless telegraphy. Women not only served as wireless operators, but also as instructors of radio classes for men, inspectors of radio equipment, and researchers in the Corps' research and

development offices. The Army Signal Service was the only service that permitted women to wear uniforms resembling those of men (skirts replaced trousers). Shown is Miss Elizabeth Baker (left) with two unidentified colleagues and an unidentified driver circa 1918.

Americans at Verdun

Those who lived and fought in the trenches during WWI not only endured the enemy's weapons of war—bombs, bullets, tanks, flamethrowers, grenades and poisonous gas—but also the unforgiving cold and incessant dampness. The deplorable living conditions bred diseases such as dysentery, typhus, cholera, and fungal conditions, often resulting in trench mouth and foot. Thousands on both sides perished. Shown are American soldiers looking out towards a valley near Verdun, France, from their vantage point on a hilltop trench in 1918.

Sergeant Major Daniel Daly

By 1917, Sergeant Major Daly was a seasoned NCO with the American Expeditionary Forces' Marines 6th Regiment, 73rd Machine Gun Company. After Russia's defeat in 1918, Germany launched multiple offensives against France. The Third offensive began in May. Outgunned and pinned down under a heavy artillery barrage, Daly called a frontal attack, yelling, "Come on, you sons of sea witches! Do you want to live forever?" Daly single handedly destroyed a machine gun nest. The AEF halted the Germans at Chateau Thierry/Belleau Wood.

Fort de la Pompelle

The Fort de la Pompelle (pictured) was completed in 1883, as one of several forts protecting the city of Reims, France. During WWI, the fort was taken by the Germans on September 4, 1914. The French quickly retook it on September 24, and held it through the German offensive in the spring of 1918. The fort was bombarded to the point of ruins during the Second Battle of the Marne.

Observation Balloon

The static nature of trench warfare led to a concentration of surveillance balloons to observe troop movements and to spot artillery fire at a distance. Tethered to the ground by steel cables, operating altitudes of one mile were not uncommon. Later in the war, fixed-wing aircraft assumed most balloon missions, although artillery spotting continued from balloons until 1918. Shown is a U.S. Army officer observing the landscape from a balloon.

Aftermath of Zeebrugge Raid

In April 1918, Britain executed a plan to sink three old British ships to block the entrance to the Port of Zeebrugge, a major German submarine base. The ships were loaded with concrete and steered towards the harbor. Although one was sunk by German fire before reaching the desired position, the British successfully sunk two ships and closed the port for several days. Only at high tide could German submarines pass through the port entrance. Shown is an aerial photo of the port clearly displaying the three sunken ships.

Crossing the Marne

As temporary replacements for destroyed bridges across Europe, numerous small boats, with their bows pointed towards the oncoming flow of water, served as pontoons, supporting a sectional wooden deck laid across their tops. Aerial photography helped identify destroyed bridges and the need for pontoon bridges. Shown are US Forces crossing the Marne River near Lucy, France, July 20,

1918. The pontoon bridge was a temporary replacement for the destroyed bridge in the background. As pontoon bridges of this size were especially buoyant, the soldiers crossing are using caution by keeping equal spacing and their preserving balance.

Ernest Hemingway

Rejected by the Army for medical reasons, eighteen-year old Ernest Hemingway joined the Red Cross as an ambulance driver and arrived in Italy in June 1918. On July 8, he was severely wounded, ending his military career. He was honored for his bravery, receiving Italy's Medal of Valor for carrying a soldier to safety. Shown is Hemingway in an ambulance in 1918. In 1929, he authored *Farewell to Arms,* an iconic novel based on the war.

Field Artillery Captain Harry S. Truman

In 1918, Harry Truman commanded Battery D of the 129th Field Artillery Regiment of the 35th Infantry Division. Arriving in Europe without heavy weapons, Battery D spent time training with French 75mm field guns before joining the Allied forces in launching the massive Meuse-Argonne Offensive in September 1918. Enduring forty-seven days of heavy combat, Battery D was fortunate and suffered no combat deaths. Truman demonstrated courageous leadership under fire, attributes later tested as president of the United States from 1945 to 1953.

Model of German Lines

Aerial photographs of battlefields were used for intelligence gathering, preparation, and updating maps. The Allies creatively used aerial photography to make threedimensional models of trenches. Shown is a model constructed northwest of Lens, France, in September 1918. By replicating the natural terrain and adding the manmade features in approximate scale, the Allies created a simple yet effective model. In the center of the model a sign reads "No Man's Land." Barely visible in the background, fence stakes are used to deter casual walkers.

Critical Staff Work

The work of military staffs was vital in providing senior leadership with information and intelligence, and in serving as a link between those who gathered information and those on the front lines who would use it against the enemy. Shown are staff members from the US Army III Corps Observation Group Staff studing maps, charts, and reports in this photograph taken at Souilly Aerodrome, France, in October 1918 during the Meuse-Argonne Offensive. Note the "OBSERVERS BULLETIN BOARD" on the left for the posting of aerial reports and photographs.

Camouflage

Aerial photography introduced a new dynamic to combat—armies now had to disguise their movements, weapons, supplies, and the like to avoid detection from above. Camouflage became a critical weapon in defeating aerial imaging. The mission to design camouflage for the US Army was given to Company "A" of the 40th Regiment of Engineers. General Charles Summerall, commander of the Field Artillery Brigade of the 1st Division, was recorded during the war saying, "Camouflage is next in importance to ammunition to artillery." Shown are US Army trucks with camouflage netting.

100 Days

A four-day battle during the great Allied "100 Day Offensive" of 1918 successfully reduced the size of the German-held Saint-Mihiel Salient, a land area measuring fifteen by thirty-five miles. The

deflated bulge provided US Army General John Pershing a gateway to the fortress city Metz, and beyond to Germany. In this first independent American Expeditionary Force operation, US Army Colonel William "Billy" Mitchell planned the greatest amassing of air power to date in support of the Saint-Mihiel offensive.

Major George S. Patton

General J.J. Pershing, commander of the American Expeditionary Forces (AEF), selected ex-aide, George Patton, to direct the new Tank Corps. Initially, the AEF lacked armor until acquiring French Renault FT light tanks. Patton commanded 345 tanks at the beginning of the Meuse-Argonne offensive in 1918. On the Western Front, maintenance, insufficient fuel, and faulty fan belts doomed most tanks. By the Armistice, only about fifty tanks remained operational.

Lieutenant Colonel Billy Bishop

William Avery Bishop was Canada's top flying ace with seventy-two "kills." Initially serving as an aerial observer, Bishop spotted artillery and conducted photo reconnaissance. From 1917 to 1918, he flew combat missions. Late in the war, Bishop worked for an independent Canadian air arm. He was awarded the Victoria Cross, Britain's ultimate combat heroism award for a solo aerodrome strike—one without corroborating witnesses. Bishop is one of over 20,000 Canadians who flew for Britain during WWI.

Trench Design

The US Army's 354th Aero Squadron performed short-range, tactical reconnaissance over the trenches and battlefield in the Toul sector of France from October 28 to November 11, 1918. While trenches were often designed as straight lines to aid mobility, the buttress, or "zip-zag" style, were designed to enhance defense. Shown is a squadron aircraft flying over the Toul battlefields in 1918. Clearly visible is the buttress style trench. The devastation wrought by war is evident by the lack of vegetation around the trench and the pock marked landscape.

Yanks Returning Home

The 69th Infantry Regiment from New York City took part in major combat during WWI fighting in the Battle at Rouge Bouquet, Chaussilles, and the Second Battle of the Marne, Chateau Thierry, St Mihiel and Meuse-Argonne. Shown is the Regiment marching up 5th Avenue from Washington Square on their way to 115th Street on April 28, 1919. The Metropolitan Museum of Art, seen in the background, was the site of the reviewing stand where Governor Alfred E. Smith and Mayor John F. Hylan welcomed the victorious troops home.

Scouting U-boats

Blimp-type observation balloons were used to watch for German U-boats, which preyed on Allied ships on the Atlantic coast. The balloons were tethered to vessels when deployed at sea and the descent required the balloon observer to climb out of the balloon basket and propel down an attached rope ladder. Once in range, the observer would slide down the rope line to safety of the vessel. Shown is a naval observer coming down from the "nest" of his balloon somewhere over the Atlantic in 1918.

Breaking Combres Hill

Combres Hill, located three hundred feet above the village of Combres, France, was the scene of fierce fighting between the French, who usually held the hill, and the Germans, who continually tried to recapture it. Shown is an aerial view of Combres Hill (circa 1918). The soft terrain from its history of cultivation was exacerbated by the bombardment from above, trenching on top, and tunneling below.

Sergeant Alvin York

Sergeant Alvin York, a pacifist who reluctantly accepted the concept of a just war, served on the Western Front with the US 82nd Infantry Division. During the Meuse-Argonne offensive, in the autumn of 1918, York and sixteen others set out on patrol to seize a sector of the Decauville railroad. A misread French map resulted in a firefight with a German reserve unit. With eight dead or wounded and eight guarding prisoners, York led an attack on a German machine gun nest, killing twenty-four Germans and capturing 132.

Captain Edward "Eddie" Rickenbacker

Captain Edward "Eddie" Rickenbacker, was America's premier flying ace in WWI, achieving twenty-six aerial victories between April 29 and October 30, 1918. Eddie flew with the 94th Aero Squadron known as the "Hat in the Ring" Squadron—after its insignia. Capt. Rickenbacker was awarded the Medal of Honor and, from France, the Legion of Honor and the Croix de Guerre.

Treaty of Versailles

The Treaty of Versailles formally ended World War I, although not all nations, including the United States, signed it. Several other treaties were required to bring the war to full closure. On June 28, 1919, in the ornate setting of the Hall of Mirrors at the Palace of Versailles, Prime Minister Georges Clemenceau of France signs the treaty. While the treaty officially ended the war and brought a much needed peace to Europe, the treaty is thought by some to contain the seeds that sprouted World War II.

The Big Four

The Paris Peace Conference (January 18, 1919 – January 21, 1920) brought together the WWI adversaries after more than four years of war. Although attended by more than one-hundred nations, the major decisions were made by the "Big Four"—the United States, Britain, France, and Italy. The most notable outcomes were the Treaty of Versailles and the League of Nations. Shown here are leaders of the Big Four, (L to R), David Lloyd George, Britain; Vittorio Orlando, Italy; Georges Clemenceau, France; and Woodrow Wilson, United States.

Liquid Fire

The flame thrower consisted of a pressurized tank which had one compartment for nitrogen gas and another for petrol. A rubber hose with a metal nozzle allowed the contents to be directed at the enemy in near or far bursts (twentyfive to one-hundred meters). Flame throwers were very effective tools of war against pillboxes, dugouts, and trenches. Shown is an aerial photo of a section of smoldering battlefield, clearly displaying the effectiveness of French flame throwers in holding back the enemy (circa 1918).

President Woodrow Wilson

President Wilson initially opposed involvement in WWI. However, once the war became apparent, he championed America's role in "making the world safe for democracy." Wilson came to the presidency primarily with an academic background and was very much a visionary. He offered his Fourteen Points at the Paris Peace Conference, hoping to achieve a more lasting peace. However, America was weary of war and foreign entanglements and rejected the tenets of his Fourteen Points embodied in both the Treaty of Versailles and the League of Nations.

III Corps Observation Group

After WWI ended, the arduous task of bringing the troops home could finally begin. Shown is an aerial photo taken by the 90th Aero Squadron over Dun-sur- Meuse, Lorraine, France, capturing a column of victorious American III Corps Infantry beginning their long march home in late 1918.